

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference 101636/KCS/DG | FOR FURTHER ACTION | See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/EP00/04231 | International filing date (day/month/year) 09/05/2000 | Priority date (day/month/year) 04/06/1999 |
| International Patent Classification (IPC) or national classification and IPC H04Q7/38 | | |
| Applicant NOKIA NETWORKS OY et al. | | |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 6 sheets, including this cover sheet.

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I Basis of the report
- II Priority
- III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI Certain documents cited
- VII Certain defects in the international application
- VIII Certain observations on the international application

| | |
|--|--|
| Date of submission of the demand 03/10/2000 | Date of completion of this report 22.08.2001 |
| Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx 523656 epmu d Fax: +49 89 2399 - 4465 | Authorized officer Kreppel, J Telephone No. +49 89 2399 8246 |



**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. PCT/EP00/04231

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):
Description, pages:

| | | | |
|--------|---------------------|---------------------------|------------|
| 1,3-15 | as originally filed | | |
| 2 | as received on | 21/07/2001 with letter of | 19/07/2001 |

Claims, No.:

| | | | |
|------|----------------|---------------------------|------------|
| 1-21 | as received on | 21/07/2001 with letter of | 19/07/2001 |
|------|----------------|---------------------------|------------|

Drawings, sheets:

| | |
|---------|---------------------|
| 1/3-3/3 | as originally filed |
|---------|---------------------|

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

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the description, pages:
 the claims, Nos.:
 the drawings, sheets:

5. This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | |
|-------------------------------|------|--------------------|
| Novelty (N) | Yes: | Claims 10,11,20,21 |
| | No: | Claims 1-9,12-19 |
| Inventive step (IS) | Yes: | Claims |
| | No: | Claims 1-21 |
| Industrial applicability (IA) | Yes: | Claims 1-21 |
| | No: | Claims |

**2. Citations and explanations
see separate sheet****VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:
see separate sheet

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**With respect to item V:**

- 1 The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: WO 99 27741 A (ERICSSON TELEFON AB L M) 3 June 1999 (1999-06-03)

- 2 Document D1, which is regarded to represent the closest prior art to the subject-matter of **claim 1**, relates to a move-over procedure for a CDMA base mobile telecommunications system wherein diversity connections and soft-handover are used. Different Mobile Switching Centers (MSC) and Radio Network Controllers (RNC) are involved into a move-over of the diversity handling function as shown in figures 11 to 12C. After having switched the diversity handling function from a first RNC to a second RNC, the connection might be switched via another MSC thus eliminating the old MSC and RNC from the connection path.

Hence, document D1 discloses, according to the features of claim 1, a network element (figure 12, 122₁) for use in a communication network, said network element being arranged between a mobile station (figure 12: MS) and an end element (figure 12: 124₂), wherein connections are established between said mobile station and said end element via said network element (fig. 12: 132), said network element comprising means for determining if the connection between said end element and said end station is to be released (fig. 12C; page 27, lines 3-11).

The subject-matter of claim 1 is therefore not novel (Article 33(2) PCT).

The scope of present claim 1 is so broad that also a call release procedure initiated by a mobile terminal, detected by a Mobile Switching Center sending an ISUP release message to an interoffice exchange could be considered as falling within the scope of claim 1.

- 3 Independent **claim 19** relates to a network comprising a network element as defined in any of claims 1 to 18. Such a network element is already known from

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document D1 (see the comments and citations regarding claim 1). As already explained above, document D1 discloses also a network comprising an end element and a mobile station.

The subject-matter of claim 19 is therefore not novel (Article 33(2) PCT).

4 Dependent claims 2 to 18, 20 and 21 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step for the following reasons:

4.1 The subject-matter of dependent claims 2 to 9 and 12 to 18 is already known from document D1.

claims 2-8: figure 14; page 28, line 6 to page 30, line 21;
claim 9: figure 9: 9-4; page 20, line 20 to page 21, line 9;
claim 12-17: page 6, lines 14-20;
claim 18: figure 13: 122,

The subject-matter of claims 2 to 9 and 12 to 18 is therefore not novel (Article 33(2) PCT).

4.2 Dependent claims 10, 11, 20 and 21 relate to further design details and arrangements of the end station, the end element and the network which are obvious for a person skilled in the art. The subject-matter of claims 10, 11, 20 and 21 is therefore not based on an inventive step (Article 33(3) PCT).

With respect to item VII:

- 1 Independent claims 1 and 19 are not in the two-part form recommended by Rule 6.3(b) PCT having a pre-characterizing portion which correctly reflects the prior art of document D1.
- 2 The relevant background art disclosed in document D1 is not taken into account

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within the opening part of the description (Rule 5.1 a) ii) and iii) PCT).

- 3 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).
- 4 Claim 20 should apparently be dependent on claim 19 (and not 19 or 20). Claim 21 should be dependent on claims 19 or 20 (and not 19, 20 or 21).

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core network is unable to predict the traffic which is to be transmitted between the core network and the mobile station and vice versa.

- 5 It has been proposed that a timer mechanism be used by the core network in order to control the release of the connection. For example, if a packet of data has not been received for X seconds, then the connection is released.
- 10 This method has the problem that the core network may not release this connection at an appropriate time. This is because the core network is not aware of parameters of the radio network controller or the mobile station which might indicate that an earlier break in the connection was appropriate. This may result in connections being maintained longer than required. This unnecessarily uses up resources within the network, which may reduce the amount of traffic which can be supported.

20 Summary of the Invention

It is an aim of embodiments of the present invention to address this problem.

- 25 According to one aspect of the present invention, there is provided a network element for use in a communications network, said network element being arranged between a mobile station and an end element, wherein connections are established between said mobile station and said end element via said network element, said network element comprising means for determining if the connection between said end element and said mobile station is to be released.

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CLAIMS:

1. A network element for use in a communication network, said network element being arranged between a mobile station and an end element, wherein connections are established between said mobile station and said end element via said network element, said network element comprising means for determining if the connection between said end element and said mobile station is to be released.

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2. A network element as claimed in claim 1, wherein said network element is arranged to release said connection when the determining means determines that the connection is to be released.

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3. A network element is claimed in claim 2, wherein said network element is arranged to release the connection between the network element and said mobile station.

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4. A network element as claimed in claim 2 or 3, wherein said network element is arranged to send a message to the end element indicating that said connection has been released.

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5. A network element as claimed in claim 1, wherein said network element is arranged to send a request for the connection to be released to said end element.

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6. A network element as claimed in claim 5, wherein the end element sends a connection release command to said network element in response to the release request received by said network element, said network element controlling the release of said connection.

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7. A network element as claimed in claim 6, wherein said network element is arranged to send a release request to said mobile station in response to the release command received from said end element.

8. A network element as claimed in claim 7, wherein said network element is arranged to send a message to said end element advising that the connection has been released.

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9. A network element as claimed in any preceding claim, wherein said determining means determines that the connection is to be released if the connection has not been used for a predetermined time.

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10. A network element as claimed in claim 9, wherein the predetermined time depends on the type of traffic for which the connection is intended.

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11. A network element as claimed in claim 9, wherein the predetermined time depends on the quality of service profile of the traffic for which the connection is intended.

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12. A network element as claimed in any preceding claim, wherein said determining means is arranged to determine if the connection is to be released based on the state of the mobile station.

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13. A network element as claimed in any preceding claim, wherein said determining means is arranged to determine if the connection should be released based on the movement of the mobile station.

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14. A network element as claimed in claim 13, wherein the amount of updating information received in a given time from the mobile station is used as a measure of the movement of the mobile station.

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15. A network element as claimed in claim 14, wherein said updating information comprises URA updates.

10 16. A network element as claimed in any preceding claim, wherein said determining means is arranged to determine if the connection should be released based on the location of said mobile station.

15 17. A network element as claimed in claim 16, wherein said determining means determines that the connection should be released if the mobile station is associated with a different network element.

20 18. A network element as claimed in any preceding claim, wherein said network element is a radio network controller.

19. A network comprising a network element as claimed in any preceding claim, a mobile station and an end element.

25 20. A network as claimed in claims 19 or 20, wherein said end element is a SGSN.

21. A network as claimed in claims 19, 20 or 21 wherein said network operates in accordance with the UMTS Standard.

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